BELLCOMM, INC.
955 L'ENFANT PLAZA NORTH, S.W. WASHINGTON, D.C. 20024

SUBJECT: Project Tektite Behavior Observer's Handbook - Case 730

DATE: April 14, 1969

FROM: N. Zill

MEMORANDUM FOR FILE

The attached document is the training handbook for the behavior observers in Project Tektite. It was prepared by Lt. R. Mach and Dr. R. Radloff of the Naval Medical Research Institute and the undersigned. Although written specifically for the observers, it provides a good picture of the kind of behavioral monitoring being done in Tektite.

The behavioral data, punched directly onto pre-perforated IBM cards by the observers, is sent to Bellcomm weekly, where it is copied, sorted, edited, and stored on magnetic tapes. Analysis of the data will be carried out at N.M.R.I., Bellcomm, and by Dr. R. Helmreich at the University of Texas.

Other parts of the Tektite Behavior Program, formulated by NASA and Navy Psychologists,* include:

a) EEG Sleep analysis, (Navy Medical Neuropsychiatric Research Unit and NASA Manned Spacecraft Center);

b) measurement of aquanaut performance on the Langley-OART psychomotor device;

c) recording of unusual events on videotape, and in a written log;

d) habitability and sociometric questionnaires;

e) use of engineering, medical, and marine science data to elucidate behavioral findings.

Nicholas Zill

1011-NZ-gdn N. Zill

Attachment
Tektite Behavior Observer's Handbook

*See, Zill, N., The Tektite Project Behavior Program, Bellcomm Memorandum for File, April 11, 1968.

BEHAVIOR OBSERVER'S HANDBOOK.

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Appendix

GENERAL

TEKTITE I is a project conceived by a number of Government agencies to explore the feasibility of marine scientific research being done by men living on the ocean's floor. Such a project offers a truly unparalleled opportunity for other scientific agencies to, in turn, study the aquanauts living in the sea. To this end a number of physicians, physiologists, and psychologists have collaborated in making this many faceted scientific study of men-under-the-sea by far the most comprehensive ever.

Observer's contribution

Having volunteered, you have been given orders to St. John to participate in this project as a scientific observer with the behavioral program. The observer will collect varied and unique kinds of scientific information as directed by the behavioral scientists. The primary purpose of this manual is to acquaint the observer with each of these psychological measures. However, it also deals with information on what kind of work schedule to expect; the kind of equipment you can expect to handle; a glossary of terms, often psychological in nature, which will contribute to your effectiveness as a behavioral observer; and various other information.

The six observers will be split into three two-man teams. Teamwork will play a large part in the overall success of our project . . . for this will become your project too. Your team will either work two four-hour shifts during the day or you, yourself, will work a four-hour "graveyard" shift. Some of the equipment that will be employed during this operation includes a video tape recorder, television cameras and receivers, IBM information recorders, observer consoles, and a PR-10 audio tape recorder. Although, at present you may know little if anything about these kinds of equipment - you will shortly. This manual will not handle operating procedures for any of the equipment because a first hand demonstration outweighs any written instruction.

The Data Collection Setting

The great majority of all of the behavioral data collection will be done within the command van. This van is located on a special wharf built right next to the cliff forming the southeastern corner of Greater Lameshur Bay, which in turn, is located on the southern shore of St. Johns Island. The van is divided in two, one section

being the command station, the other the behavioral monitoring station. The command station will be manned at all times by a test director. His mission is to continually maintain the safety of the men in the habitat and in the sea. The behavioral observers will work in the behavioral monitoring station. This station will be connected with the underwater habitat, TEKTITE I, in a number of ways. Closed circuit television cameras will send back pictures of each of the four main compartments in the habitat as well as activity in the sea. Microphones in each compartment (see appendix for representation of habitat) pick up the conversations of the aquanauts and an intercomm system from habitat to command station will allow the behavioral monitors to listen to aquanaut communication with topside, usually with the test director.

The underwater habitat (see appendix) could be described as two large cans or canisters connected by a tunnel between the upper decks. Each of the four major compartments have rather unique and specific functions. The CQ, crew quarters, offers sleeping and eating area plus food storage and preparation and recreation facilities. The bridge compartment above serves as a watch standing facility offering communication lines to the surface, closed circuit TV monitors focused on the area outside of the habitat, and contains scientific equipment for recording reports and doing scientific micro-analysis. The engine room or ECS (environmental control system) across the tunnel from the bridge primarily contains the large machinery committed to maintaining a comfortable and safe habitat environment. This compartment also contains a storage freezer, and the head. There is a small secondary compartment directly above the engine room. This is the observation cupola. The final compartment is the wet lab. This area allows ingress and egress to the sea through the hatchway, serves as the major work space, and contains research and marine equipment and the shower.

The preceding habitat description was necessarily very sketchy. During a comprehensive pre-dive observer briefing, the investigators will describe the entire habitat in a good deal more detail. (see appendix for floor plan and cutaway view)

There are two major methods used in collecting behavioral information. Some data can be recorded after the fact (off-line) while most of the data will be noted as it occurs (on-line collection). One or the other of two devices will be employed in recording any particular measure. The check-list is a paper and pencil recording. The IBM information recorder allows the observer to punch important called for information directly onto IBM cards. The most important instruction that can be given about filling out the checklist is to

print clearly. Instructions regarding the information recorder are included in a separate booklet affixed to this manual and one page of the appendix is devoted to special instructions concerning the device.

Each observer team will be responsible for recording up to 18 unique measures during their daily duties. Some of these measures are very easy to spot and record such as "time of retiring" while others which often occur spontaneously such as the dive record are much more difficult to identify and record. The bulk of the manual is concerned with discussing each of the measures in detail.

On each team, one man (the secondary observer) will be specifically engaged in getting the location and conversation records. When he isn't busy with these two especially critical measures he will help out the primary observer with the other measures. Occasionally this observer will find a number of behaviors to be measured occurring simultaneously. The secondary observer may be busy with one or the other of his critical measures and cannot assist. In such a situation, the observer should refer to the measure priorities listing in the appendix which indicates which of the then occurring measures is of highest priority. The data included in that measure should be recorded without fail. If comparatively complete data on some of the other measures can be also collected without jeopardizing the highest priority data collection, then this should also be accomplished.

During the next 64 days you may well learn more about more things than in any comparable period in your life. You can obtain a bird's eye view into the fields of oceanography, geological and biological marine research, physiology, medicine, and psychology, and develop facility in the use of many types of equipment. However, most critical to your success here as an observer is how quickly you learn each of the meanings of and all of the items in the behavioral measures.

Your commitment to the success of <u>our</u> project within a greater project is even more important. The next two months will be challenging ones with little time for non-scientific pursuits, but at its close you may well say you have in some way contributed to developing undersea resources, to analyzing man's ability to live in an alien realm in a unique environment and, perhaps indirectly, to establishing initial stages of a new frontier in food production - the sea. Who knows? One thing is certain however, at the dive's end you should have every right to feel proud of your unique contribution.

LOCATION RECORD

This measure focuses on each of the four aquanauts at specific, predetermined times throughout each 24 hour day. Each day's recording times comprise a list which will be supplied to the observers at the beginning of each new day. Each record time is to the minute at which the observer begins recording. Approximately 30 seconds prior to the sampling minute, (use clock alarm as reminder) the observer should familiarize himself with the general whereabouts of each man, in general what he seems to be doing, and whether he is in conversation with other aquanauts or topside. This thirty second prep period will sensitize the observer to the specific items covered by the location record and aid in making quick, accurate judgements. Also, during this period the observer can be punching in the measure identification, the date, and the recording time to the correct minute.

When the recording minute comes due as indicated by the 24-hour clock, look quickly at the television monitors and observe, for approximately two seconds, aquanaut #1. Try to form a picture in your mind of (1) where he is located according to the TEKTITE I deck sectioning schematic (it is important to become very familiar early with this illustration) at the end of two second period, (2) which of the work status categories his behavior would place him in at that moment and, (3) is he talking or listening to another aquanaut or topside during the 2-second period. Having made these three decisions, punch the data using the location record template. Become especially familiar with its organization.

Do this for each of the other three aquanauts.

You, undoubtedly have noted other measures on the location record template. These are contingency or dependent measures; that is the only time you would record bunk curtain closure is when an aquanaut is in bed. The blocked, inoperative camera measure is recorded only when one of the four habitat cameras is in fact blocked out or inoperative.

Once the observer becomes thoroughly familiar and comfortable with what he is to do such a record should take less than a minute to complete. The observer should be forwarned that infrequently two recording times will occur, one immediately after the other. Being aware of this ahead of time by prior examination of the list will prevent being surprised at missing a sampling period.

LOCATION RECORD #30

LEGEND
CO = CREW QUARTERS
B = BRIDGE
T = TUNNEL
CU = CUPOLA
ECS = ENVIRONMENTAL CONTROL SYSTEM
WL = WET LAB
WAT = WATER

DEFINITIONS:

DIRECT MAR RSRCH
SPECIMEN COLLECTION & HANDLING, ACTIVITIES IN SEA

MARN RSRCH SUPPORT
PREPARAT. FOR RSRCH AS FILLING TANKS, READING JOURNALS, REPAIR AND READYING OF EQUIP

OTHER SCIENCE WORK
BIOMED SAMPLING, EEG ELECTRODE ATTACHMNT, PSYCH QUESTIONNAIRES

HABITAT MAINT / REPAIR
HOUSE KEEPING, REPAIRS REFURBISHING OF ECS EQUIP.

LOCATION

MSR ID	DEC / NOV / Month	DAY	RECORDING TIME (HR, MIN)	COMPARTMENT	MAN # 1 2 3 4	SECTION	MAN # 1 2 3 4	WORK STATUS CATEGORIES	MAN # 1 2 3 4	IF MAN IN BUNK THEN AMT. OF CURTAIN CLOS	MAN # 1 2 3 4	COMMUNICATIVE STATUS	MAN # 1 2 3 4
0	OCT			CO		0		DIR. MARN. RSRCH		FULLY OPEN			
1	JAN			B		1		MARN. RSRCH SPPT		1/4 CLOSED			
2	FEB			T		2		OTHR. SCIEN. WRK		1/2 CLOSED			
3	MAR			CU		3		HABIT. MAINT/REPR		3/4TH CLOSED			
4	APR			ECS		4		WATCH STNDG		FULLY CLOSED			
5	MAY			WL		5		SELF MAINTNC.				TALKING WITH OTHER AQUAN.	
6	JUN			WAT		6		RECREATION				LISTENING TO OTHER AQUAN.	
7	JUL			DNT KNO		7		RELX, REST, SLEEP				TALKING WITH TOPSIDE	
8	AUG			BRIDGE		ECS		IN TRANSIT				LISTENING TO TOPSIDE	
9	SEP			CREW QURT		WT LAB		DN'T KNOW				NOT COMMUNICATING	

BLOCKED OR INOPERATIVE CAMERA IN

* IF COMPARTMENT CAMERA BLOCKED OR INOPERATIVE PUNCH APPROP AREA.
IF AQUANAUT CANNOT BE LOCATED, PUNCH DON'T KNOW IN COMPARTMENT CATEGORIES

CONVERSATIONAL RECORD

This measure focuses on the conversation among the aquanauts, whether in two, three, or four man groups. The data will be collected through use of a tape recorder and tone generator. This measure and the location record are the two most important measures of the entire behavioral program. Therefore, it is imperative that the observer soon become adept at the procedure involved with recording this measure.

Sampling Procedure

There are only certain periods during which conversational sampling may go on. The observer refers to the location record sampling schedule to identify these periods. They are noted as a red line between any two clock times on the schedule. The time above indicates the beginning of the period, the time below, the end of the period.

The observer, whose prime responsibility it is to take the conversational record, is also responsible for the location record. Thus, during a conversational sampling period the first minute will be taken up completing the location record. That observer is then available to sample conversation. There are a number of rules to follow in sampling.

(1) A conversation is an interaction between two or more aquanauts that appears to be of some duration rather than a few passing comments.

(2) The observer should attempt to record 3 minutes of continuous conversation within a sampling period which ranges in length from 6 to 29 minutes.

(3) Habitat conversations are not scheduled. The observer has no control over them. Thus, the observer can expect one of three conditions to exist during the sampling period.

- (a) Conversation is in progress as the observer becomes ready to record.
- (b) Conversation begins later in the sampling period.
- (c) There is no conversation during the sampling period.

(4) Such conditions then demand the observer's sensitive attention to conversations arising during a sampling period.

(5) If the observer records a conversation which lasts less than 2 minutes he should record the next conversation which arises during the period. If the conversation is greater than 2 minutes but less than 3 minutes, then the observer need not record another conversation within that period.

(6) If a conversation begins less than 90 seconds before the beginning of the next location record (the end of the conversational sampling period) the observer is not to record.

If the observer follows these guidelines, he should experience little trouble in sampling conversation.

Recording Materials

In recording a conversation the observer will be required to use a tape recorder and a tone generator. The tape recorder will record the voices of the conversation on one track of the tape while the observer-operated tone generator will produce tones for recording on a parallel track of the tape. The investigators will instruct you in the use of the tape recorder. The tone generator has button controls. Four of these buttons each represent the voice of a different aquanaut. The observer's task during actual conversation recording is to press any particular aquanaut's button when he is talking and only when he is talking. That is, the appropriate button is depressed immediately when the particular aquanaut begins to speak and released just as quickly when he ceases speaking. The light above each button indicates when the pressed button is, in fact, generating a tone. These taped tones will later be converted by a device to numbers making them suitable for computer analysis. The fifth button is used to register the start of a conversational recording and the sixth button registers the end of a particular recording.

Recording Procedure

The observer should observe, in order, the following operations in actually recording a conversation.

1. Check to insure the tape recorder is on
2. Switch on behavioral station comments microphone
3. Start recorder
4. Tape the following observations
    (1) The date
    (2) The time
    (3) Which compartment
    (4) Who are the initial conversational participants
5. Punch start code using appropriate tone generator button

6. Switch to habitat microphone monitoring conversation
7. Record conversation pressing and depressing aquanaut buttons appropriately
8. When either conversation appears to be finished or 3 minute quota of conversation is reached, punch out stop code using appropriate tone generator button.
9. Switch off habitat microphone
10. Switch to comments microphone. Indicate this conversation is complete by saying "This conversational sampling period is complete. The date is____, the time is_____."
11. Stop tape recorder.
12. Rewind tape slightly. Put on play mode. Check to see that both channel A and B are recording.

DO NOT ATTEMPT TO PLAY BACK ON RECORD MODE!! YOU WILL ERASE THE TAPE.

TRANSIT RECORD

This measure will be collected by use of appropriate templates on-line. It focuses on the transits of each aquanaut between decks, through the tunnel, and in and out of the habitat. Each of the ten possible transits are schematized on the transit template. The double template arrangement allows the observer to move immediately from recording on one punch card to recording on the next. This flexibility is especially desirable when the observer finds himself near the end of either of the two tiers of the template and his hands full with a large number of transits within a very short time.

On the two cards in the information recorder it is possible to record four sets of transit units, with five units in each set. A transit unit is the passage of one man from one compartment to another. In recording transit data, first punch measure ID, month and day. These data should be punched whenever a fresh card is inserted in either the "upper" or "lower" slot of the information recorder. When the first transit occurs, that is, a man moves from one compartment to another, record, by punch, the hour and minute to the nearest whole minute. Do not record seconds. (We have changed our minds since the original design of this template.) In the column labelled aquanaut, punch the number of the man who moves first from one compartment to another. In the next column, labelled transit, punch the number identifying the movement he made, for example 0 = Crew quarters to bridge, 1 = bridge to crew quarters and so on. If one man makes a "continuous" trip involving two or more transit units, record this trip in adjacent columns. If a second man accompanies him, record his trip in the same way. When five transit units have been recorded or when more than one minute has elapsed since the last transit unit was recorded, whichever comes first, punch a new hour and minute identification. This may mean that from one to four transit units will be left blank in each block between time signatures. The only exception to recording the nearest minute will occur during very high density transits. This should occur very rarely. Say, for example, that all four men move simultaneously from crew quarters to the wet lab within one minute. This means that twelve transit units will be recorded in one minute. It will be necessary to record this mass movement on two cards. Each card must have a different time signature or we cannot identify which came first. Therefore, if such high density transits occur you should arbitrarily increase the time punched in the second card by one minute. In other words, never punch the same hour and minute on two consecutive cards.

(over)

TRANSIT RECORD (continued)

In general, recording transits should be done in response to the"natural" flow of events. In addition, we are interested in identifying to the nearest minute when each transit took place. This may mean a considerable number of blank spaces during low density periods of recording.

Be sure to include punching the measure ID and the entire date, or the data on the punched cards becomes virtually unidentifiable and meaningless.

This is a high priority measure ranking in importance only behind the location record and conversational sampling.

TRANSIT RECORD #31

- AQUANT. ID #
- TRANSIT

	MSR ID #	DEC / NOV	DAY	FIRST TRANSIT START TIME HR	MIN		TRANSIT AQUANAUT						TRANSIT START TIME HR	MIN		TRANSIT AQUANAUT				
0		OCT	O O	O O	O O	0	O	O	O	O	O	0	O O	O O	0	O	O	O	O	O
1	O	JAN O	O O	O O	O O	1	O O	O O	O O	O O	O O	1	O O	O O	1	O O	O O	O O	O O	O O
2		FEB O	O O	O O	O O	2	O O	O O	O O	O O	O O	2	O O	O O	2	O O	O O	O O	O O	O O
3	O	MAR O	O O	O	O O	3	O O	O O	O O	O O	O O	3	O	O O	3	O O	O O	O O	O O	O O
4		APR O	O	O	O O	4	O O	O O	O O	O O	O O	4	O	O O	4	O O	O O	O O	O O	O O
5		MAY O	O	O	O O	5	O	O	O	O	O	5	O	O O	5	O	O	O	O	O
6		JUN O	O	O	O	6	O	O	O	O	O	6	O	O	6	O	O	O	O	O
7		JUL	O	O	O	7	O	O	O	O	O	7	O	O	7	O	O	O	O	O
8		AUG	O	O	O	8	O	O	O	O	O	8	O	O	8	O	O	O	O	O
9		SEP	O	O	O	9	O	O	O	O	O	9	O	O	9	O	O	O	O	O

	MSR ID #	DEC / NOV	DAY	FIRST TRANSIT START TIME HR	MIN		TRANSIT AQUANAUT						TRANSIT START TIME HR	MIN		TRANSIT AQUANAUT				
0		OCT	O O	O O	O O	0	O	O	O	O	O	0	O O	O O	0	O	O	O	O	O
1	O	JAN O	O O	O O	O O	1	O O	O O	O O	O O	O O	1	O O	O O	1	O O	O O	O O	O O	O O
2		FEB O	O O	O O	O O	2	O O	O O	O O	O O	O O	2	O O	O O	2	O O	O O	O O	O O	O O
3	O	MAR O	O O	O	O O	3	O O	O O	O O	O O	O O	3	O	O O	3	O O	O O	O O	O O	O O
4		APR O	O	O	O O	4	O O	O O	O O	O O	O O	4	O	O O	4	O O	O O	O O	O O	O O
5		MAY O	O	O	O O	5	O	O	O	O	O	5	O	O O	5	O	O	O	O	O
6		JUN O	O	O	O	6	O	O	O	O	O	6	O	O	6	O	O	O	O	O
7		JUL	O	O	O	7	O	O	O	O	O	7	O	O	7	O	O	O	O	O
8		AUG	O	O	O	8	O	O	O	O	O	8	O	O	8	O	O	O	O	O
9		SEP	O	O	O	9	O	O	O	O	O	9	O	O	9	O	O	O	O	O

BRIDGE 0. ↑ ↓ 1. CREW QUARTERS

TUNNEL 2. → ← 3.

CUPOLA 4. ↑ ↓ 5.

ENVIR. CONTROL SYSTEM 6. ↓ ↑ 7.

WET LAB 8. ↓ ↑ 9. WATER

MEAL BEHAVIOR

This measure is collected on-line through use of the meal behavior template and a double page information record which focuses on each meal of each aquanaut. This measure, in importance, ranks alongside the dive record and just below location record, conversational sampling and transit record. On the double template available for meal behavior there is room for four meals, which can be scored virtually simultaneously when such situations arise. If this most difficult of situations was to occur, the observer decides which aquanaut and his meal is to be recorded in which of the four segments by the order the men are served their food. That is, upper left hand segment is a record of the first man served; upper right, second man served; lower left, third man; then lower right for the fourth man served. This will require the observer to wait until serving begins to make this decision. Once the initial data has been punched for each ongoing meal, which includes which meal it is (the observer should key to time of day rather than man's often irregular schedule) see meal coding categories; who cooked the meal (punch the cook's ID number); who served the meal, and who eats the meal. To illustrate different possibilities in this initial data, one man could both cook and serve his own meal, while another man could have a second man cook his meal and still another man serve it.

When a man settles himself to begin eating should be recorded as start time. During the meal, four things should be observed for recording. (1) does the man have companionship during his meal? (2) meal size and (3) rate of eating; in other words at what rate does each aquanaut consume what size meal? (See the ten consumption categories on template) and (4) what was the amount of conversation the aquanaut indulged in during his meal, the meal period being defined as from the time the man sits down to eat until he leaves the company of the meal group. (See the amount of communication on template)

The time the man leaves the meal group (in minutes) should be punched under stop time. The location the major part of the meal was eaten should be recorded referring to the location record schematic. The final piece of information about the meal is who does the majority of cleaning up after that man's meal.

If only one meal is eaten during a given period, the observer upon finishing the recording may elect to file the half used IBM card and load the info recorder with a fresh one.

MEAL BEHAVIOR #32

MEAL CODE
1. BREAKFAST
2. LUNCH
3. DINNER
4. ANOTHER MEAL
5. SNACK
6. DON'T KNOW

CONSUMPTION
0 EATS BIG MEAL QUICKLY
1 EATS BIG MEAL MODERATELY
2. EATS BIG MEAL SLOWLY
3. EATS AVE. MEAL QUICKLY
4. EATS AVE. MEAL MODERATELY
5. EATS AVE. MEAL SLOWLY
6. EATS SMALL MEAL QUICKLY
7. EATS SMALL MEAL MODERATELY
8. EATS SMALL MEAL SLOWLY
9. DON'T KNOW

COMPANION (WHILE EATING)
1. YES
2. NO

MSR ID#	DEC / NOV	DAY	MEAL	COOK	SERVER	EATER	SITTING DOWN TO EAT START TIME HRS	MINS	CONSUMPTION	COMPANION	COMMUNICATION	LEAVING TABLE STOP TIME [MINS]	LCTN COMPARTMENT	SECTION	CLEANUP ID		MEAL	COOK	SERVER	EATER	SITTING DOWN TO EAT START TIME HRS	MINS	CONSUMPTION	COMPANION	COMMUNICATION	STOP TIME [MINS]	LCTN COMPARTMENT	SECTION	CLEANUP ID	
0	OCT															0														0
1	JAN															1														1
2	FEB															2														2
3	MAR															3														3
4	APR															4														4
5	MAY															5														5
6	JUN															6														6
7	JUL															7														7
8	AUG															8														8
9	SEP															9														9

AMOUNT OF COMMUNICATION WITH OTHERS
1. CONTINUOUS
2. GREAT AMT.
3. MODERATE AMT.
4. LITTLE
5. ALMOST NONE
6. NONE
7. DON'T KNOW

LCTN (LOCATION)
SEE LOCATION RECORD SCHEMATIC

MSR ID	DEC / NOV	DAY	MEAL	COOK	SERVER	EATER	SITTING DOWN TO EAT START TIME HRS	MINS	CONSUMPTION	COMPANION	COMMUNICATION	LEAVING TABLE STOP TIME [MINS]	LCTN COMPARTMENT	SECTION	CLEAN UP ID		MEAL	COOK	SERVER	EATER	SITTING DOWN TO EAT START TIME HRS	MINS	CONSUMPTION	COMPANION	COMMUNICATION	STOP TIME [MINS]	LCTN COMPARTMENT	SECTION	CLEAN UP ID	
0	OCT															0														0
1	JAN															1														1
2	FEB															2														2
3	MAR															3														3
4	APR															4														4
5	MAY															5														5
6	JUN															6														6
7	JUL															7														7
8	AUG															8														8
9	SEP															9														9

DIVE RECORD

This measure will be recorded on-line using the dive record template and information recorder. It focuses on the dive of any given aquanaut.

By examination, one can see this double template to be divided up into two equivalent parts, an upper half and a lower half, each concerned with a total overall dive of a single aquanaut. Such an organization allows the dives of two different aquanauts to be recorded simultaneously. In case the occasion arises when three men are in the water simultaneously, a second dive template in another double page model II information recorder could be employed.

After having punched the measure ID and full date the first order of business is to punch the start of preparation for the dive as defined on the template. Save punching the diver ID number until you are sure whether this preparation is for oneself or another diver. Preparation stop time is punched after preparation for that particular dive ceases. Preparation stop time is defined on the template. Who actually does the majority of in-habitat assisting and preparing for the dive is noted along with ID of any minor assister.

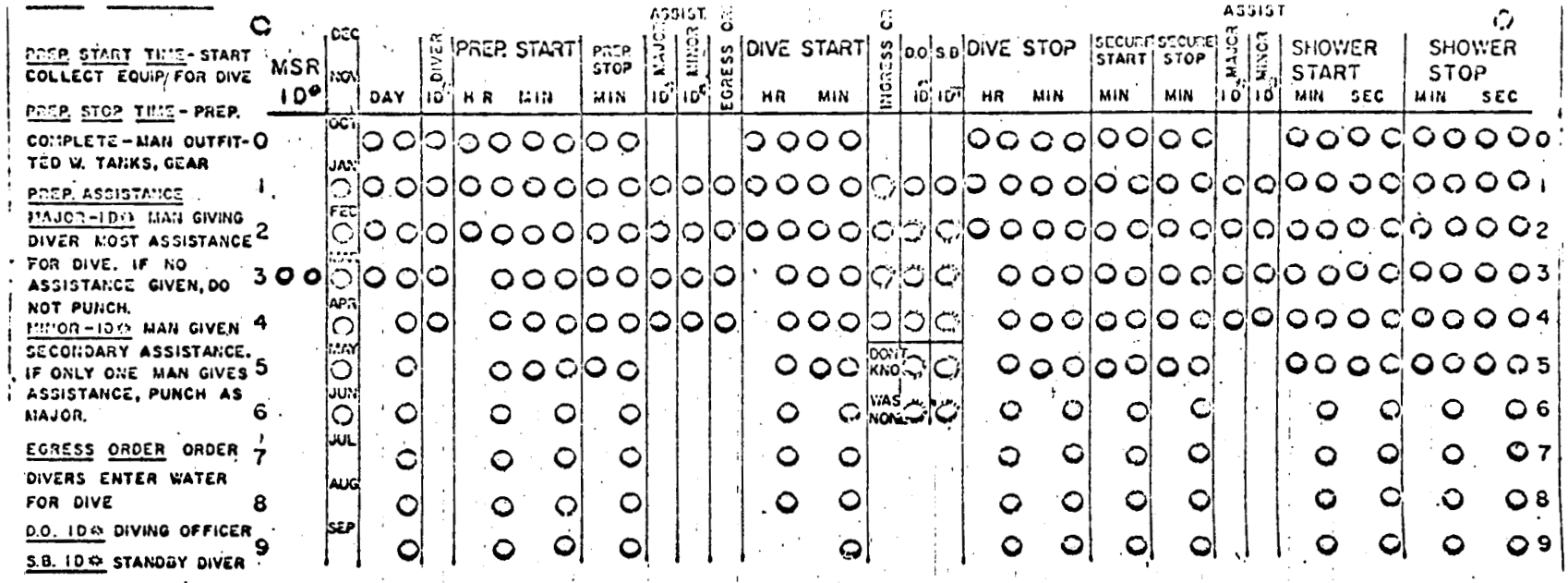
As the diver leaves the habitat, he will almost always leave with a buddy. Punch in egress order column whether man is first of the group going in the water to exit, second, or third in the rare case of three man groups. Punch the start time of diver's dive to nearest minute.

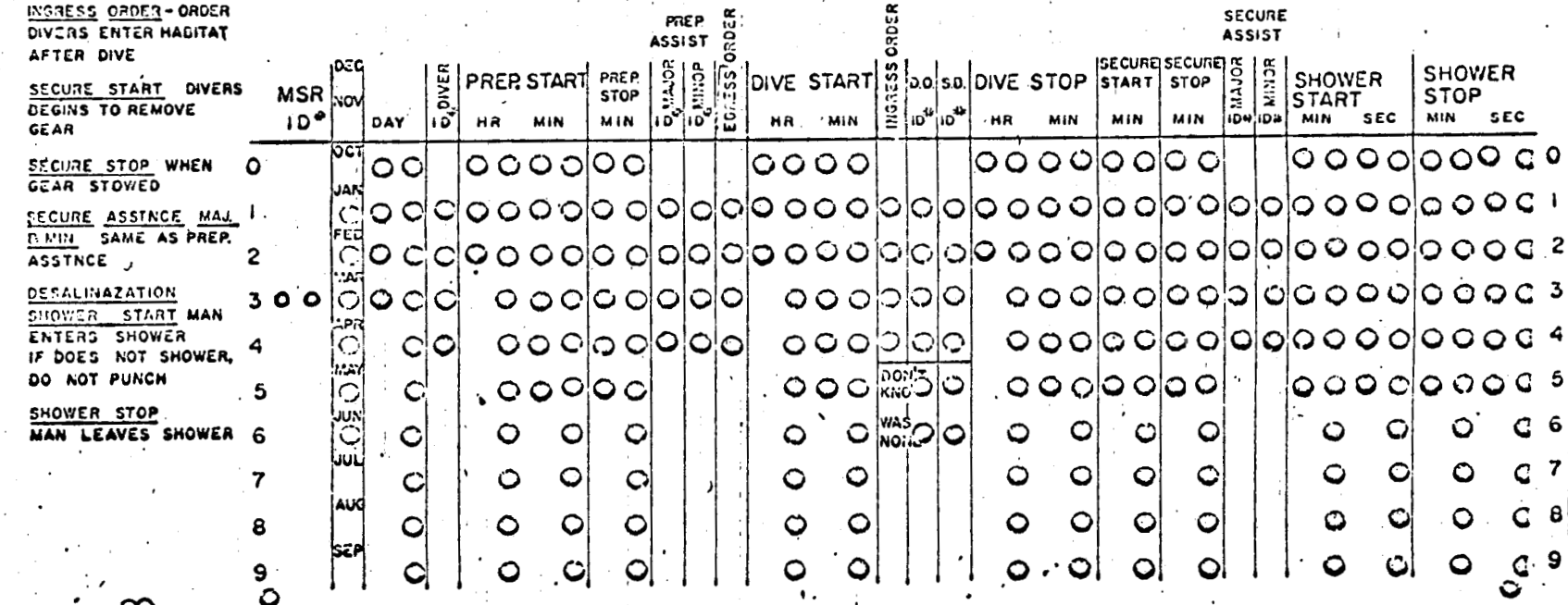
At the end of the dive punch the order the aquanauts enter the habitat; first, second, etc. Punch for each dive the identification of the diving officer and standby diver, if the observer is able to discern that the other aquanauts were filling these two posts. The end of the dive should be recorded once it becomes fairly obvious the man is in the habitat to stay; he isn't back for a piece of equipment and then returning to the sea. Thus, the time the man actually re-enters the habitat to the nearest minute must be remembered by the observer until he can make this permanent return decision.

The securing measures are very similar to the preparation measures. That is, there is a start time commencing when the man begins taking off his gear and a secure stop time occurring when the man has stowed his gear or has obviously gone on to something else other than securing.

The aquanaut coming in from the sea may desire to take a shower to wash off the sea water and perhaps to raise or lower his body temperature. The observer should record start and stop time (time man usually spends under water and any time spent soaping up, water on or not.)

The sooner the observer becomes familiar with the descriptive information contained on the template, the sooner recording the dive activity and times will become a comfortable task.


PREP START TIME - START COLLECT EQUIP FOR DIVE
PREP STOP TIME - PREP. COMPLETE - MAN OUTFITTED W. TANKS, GEAR
PREP. ASSISTANCE
MAJOR - ID# MAN GIVING DIVER MOST ASSISTANCE FOR DIVE. IF NO ASSISTANCE GIVEN, DO NOT PUNCH.
MINOR - ID# MAN GIVEN SECONDARY ASSISTANCE. IF ONLY ONE MAN GIVES ASSISTANCE, PUNCH AS MAJOR.
EGRESS ORDER ORDER DIVERS ENTER WATER FOR DIVE
D.O. ID# DIVING OFFICER
S.B. ID# STANDBY DIVER
MSR ID#
DEC NOV OCT JAN FEB MAR APR MAY JUN JUL AUG SEP
DAY
ID DIVER
PREP START HR MIN
PREP STOP MIN
ASSIST ID MAJOR
ASSIST ID MINOR
EGRESS ORDER
DIVE START HR MIN
INGRESS ORDER
D.O. ID
S.B. ID
DIVE STOP HR MIN
SECURE START MIN
SECURE STOP MIN
ASSIST ID MAJOR
ASSIST ID MINOR
SHOWER START MIN SEC
SHOWER STOP MIN SEC
DON'T KNO
WAS NON


INGRESS ORDER - ORDER DIVERS ENTER HABITAT AFTER DIVE
SECURE START DIVERS BEGINS TO REMOVE GEAR
SECURE STOP WHEN GEAR STOWED
SECURE ASSTNCE MAJ. & MIN. SAME AS PREP. ASSTNCE
DESALINAZATION
SHOWER START MAN ENTERS SHOWER IF DOES NOT SHOWER, DO NOT PUNCH
SHOWER STOP MAN LEAVES SHOWER
MSR ID#
DEC NOV OCT JAN FEB MAR APR MAY JUN JUL AUG SEP
DAY
ID DIVER
PREP START HR MIN
PREP STOP MIN
PREP ASSIST ID MAJOR
PREP ASSIST ID MINOR
EGRESS ORDER
DIVE START HR MIN
INGRESS ORDER
D.O. ID
S.D. ID
DIVE STOP HR MIN
SECURE START MIN
SECURE STOP MIN
SECURE ASSIST ID MAJOR
SECURE ASSIST ID MINOR
SHOWER START MIN SEC
SHOWER STOP MIN SEC
DON'T KNO
WAS NON

#33

COMMUNICATION WITH TOPSIDE

This measure focuses on verbal communication between the aquanauts and the surface. Collection is with on-line template. Specifically it concerns itself with one complete communication defined for our purposes here as the period spanning the time from the beginning of the use of a particular communication device like the sound powered phone until the end of that particular use of the device. In effect then, this could encompass all situations from one aquanaut talking with a single person topside to three separate aquanauts each talking with three or more different people topside.

PROCEDURE: Check to insure card is loaded.

Be sure to punch in the measure identification and the date, if possible, before you begin recording. You should be tipped off that a communication is upcoming by signals from topside, a man picking up a communication device, etc.

The first man to use the communication device should be identified in column 12 (ID#), the time the communication begins should then be recorded in the appropriate columns under start time. Who initiated the communication (did topside call habitat or did habitat call topside) should be entered in the next column. See the communication initiator code on the left side of the template for identifying appropriate punch location for each category. Next, punch the communication device (mode) used. See the communication mode categories on the template.

During this, the aquanaut's communication, be especially aware of two things, (1) who did the aquanaut spend the majority of his time talking to, (punch this in the major topside communication identification column referring to the categories on the template) and (2) the percentage of time (ranging from 0% to 100% as noted on the template) the conversation is concerned with operational as opposed to social topics. For instance, mission related topics, repair, maintenance, operational procedures, medical reports, etc. are operational in nature. On the other hand, talk about the wife and kids, about world current events, etc. is surely social. Having decided on the percent of time spent during that communication discussing operational topics, punch in the appropriate information referring to the code at the bottom of the template. This part of the communication is ended when the aquanaut who has been talking either stops using the particular communication device or gives it up to another man. At this time, the stop time should be recorded in columns 30-36.

As is apparent upon examination of the remainder of the template, there is space for two more complete recordings of other segments of the overall communication depending, of course, on whether other aquanauts take their turn at the phone. When the overall communication is ended, (the device is no longer being used) take out the punched IBM card, store it, and reload the recorder with an unused card.

#35 COMMUNICATION WITH TOPSIDE

COMMUNICATION INITIATOR CODE
1. TOPSIDE
2. HABITAT
3. DON'T KNOW

MAJ TOPSIDE COMMUNICATOR IDENTITY
1. TEST DIR.
2. MED. DR.
3. BACKUP CREW MEMBERS
4. SUPPORT DIVERS
5. OTHER SCIENTISTS
6. FAMILY
7. VIP
8. OTHER

COMMUNICATION MODE
1. INTERCOM
2. SOUND-PWRD
3. OPEN MICROPHONE
4. OTHER
5. DON'T KNOW

MSR ID#: 0 0

	DAY	ID #	START TIME HR MIN SEC	INITIATOR	COMM. MODE	STOP TIME HR MIN SEC	MAJ TSD COMMUNICENT	OPERATN CONTEXT	ID #	INITIATOR	COMM. MODE	STOP TIME HR MIN SEC	MAJ TSD COMM. IDENT.	OPERATN CONTEXT	ID #	INITIATOR	COMM. MODE	STOP TIME HR MIN SEC	MAJ TSD COMM. IDENT.	OPERATN CONTEXT
DEC																				
NOV																				
OCT	0 0		0 0 0 0 0 0			0 0 0 0		0				0 0 0 0		0				0 0 0 0		0
SEP	0 0 0		0 0 0 0 0 0			0 0 0 0		1				0 0 0 0		1				0 0 0 0		1
AUG	0 0 0		0 0 0 0 0 0			0 0 0 0		2				0 0 0 0		2				0 0 0 0		2
JUL	0 0 0		0 0 0 0 0 0			0 0 0 0		3				0 0 0 0		3				0 0 0 0		3
JUN	0 0		0 0 0 0 0			0 0 0 0		4				0 0 0 0		4				0 0 0 0		4
MAY	0 0		0 0 0 0 0			0 0 0 0		5				0 0 0 0		5				0 0 0 0		5
APR	0 0		0 0 0 0 0			0 0 0 0		6				0 0 0 0		6				0 0 0 0		6
MAR	0 0		0 0 0 0 0			0 0 0 0		7				0 0 0 0		7				0 0 0 0		7
FEB	0 0		0 0 0 0 0			0 0 0 0		8				0 0 0 0		8				0 0 0 0		8
JAN	0 0		0 0 0 0 0			0 0 0 0		9				0 0 0 0		9				0 0 0 0		9

% OF CONVERSATION THAT IS OPERATIONAL AS OPPOSED TO SOCIAL IN NATURE
0 = 0% 1 = 10% 2 = 20% 9 = 90% 11 = 100%

TIME OF ARISING AND TIME OF RETIRING

These measures are to be collected via template and on-line. They focus on the beginning (time of retiring) and end of (time of arising) each aquanaut's overnight rest. Over a period of days the observer will become more sure of whether the aquanaut is retiring for the night or just resting. Arising time could also be a problem in that the man could just be getting up for a head call then returning to bed for more shuteye. Such being the case, the observer might well record time of arising and/or retiring on a sheet of paper and then transfer it via template to punch card once he is fairly sure his judgment was correct. If the aquanauts pick widely different times to retire and arise, the observer may prefer to punch each man's time on a separate card. In this case, he should be sure not to record more than one arising nor more than one retiring time per man per day.

#37

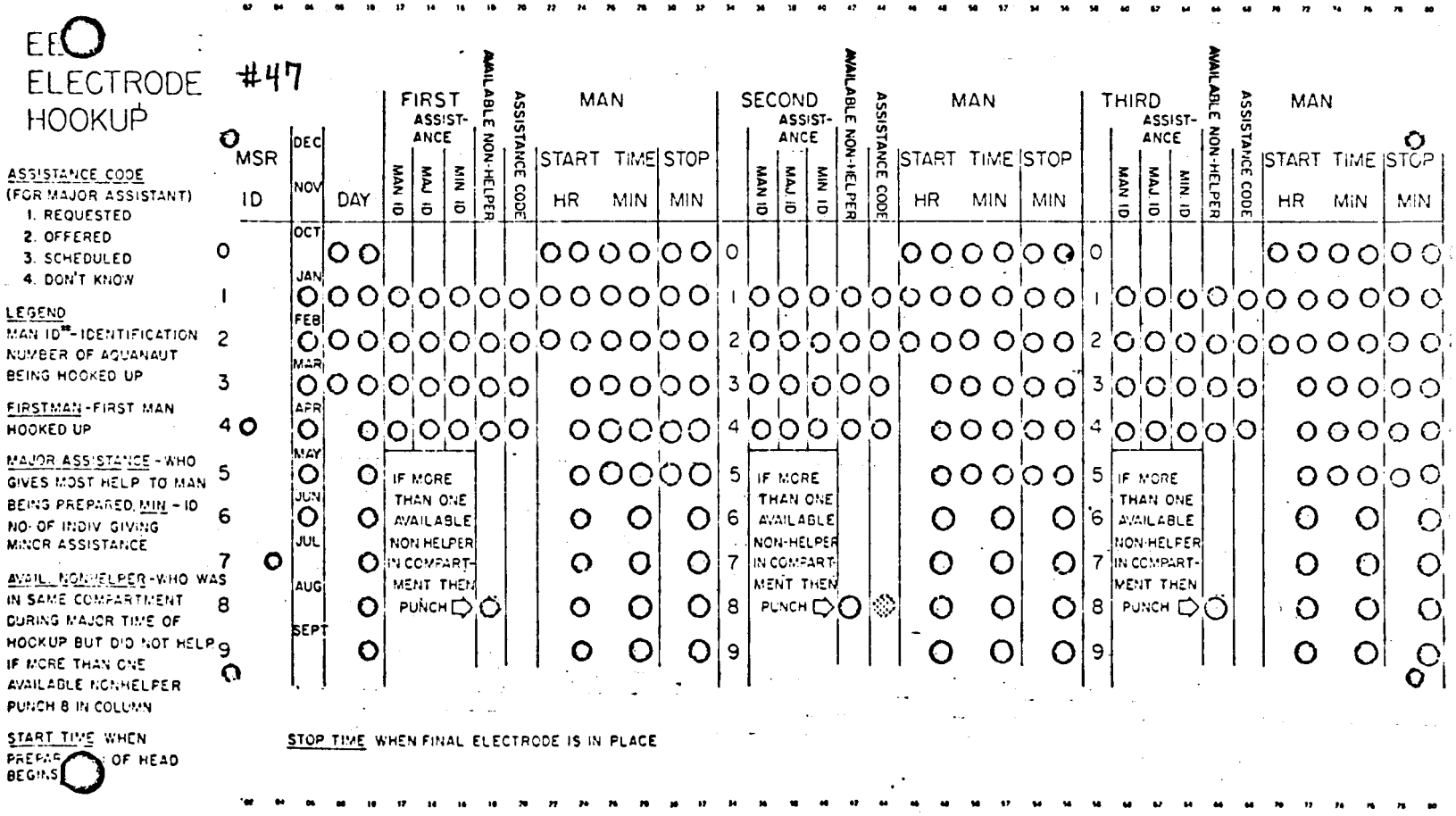
TIME OF RETIRING

DEFINITION: RETIRING. WHEN MAN ACTUALLY GETS IN BED AFTER PREPARING FOR NIGHT

MSR ID #	DEC / NOV / OCT / JAN / FEB / MAR / APR / MAY / JUN / JUL / AUG / SEP	MAN # 1 ID #	MAN # 1 TIME HR MIN SEC	MAN # 2 ID #	MAN # 2 TIME HR MIN SEC	MAN # 3 ID #	MAN # 3 TIME HR MIN SEC	MAN # 4 ID #	MAN # 4 TIME HR MIN SEC
0		0		0		0		0	
1		1		1		1		1	
2		2		2		2		2	
3		3		3		3		3	
4		4		4		4		4	
5		5		5		5		5	
6		6		6		6		6	
7		7		7		7		7	
8		8		8		8		8	
9		9		9		9		9	

EEG ELECTRODE HOOKUP

This measure is focused on the aquanaut being prepared for EEG recordings. It is collected on line with appropriate template. As the title intimates this includes the period from when the preparation begins until the final electrode has been affixed to the man's head. Note that there are three sections on the template entitled first man, second man, and third man. These three headings refer to the order the three men who are to be prepared each night are, in fact, hooked up. The remainder of the template is pretty much self explanatory. Direct any questions to the investigator.

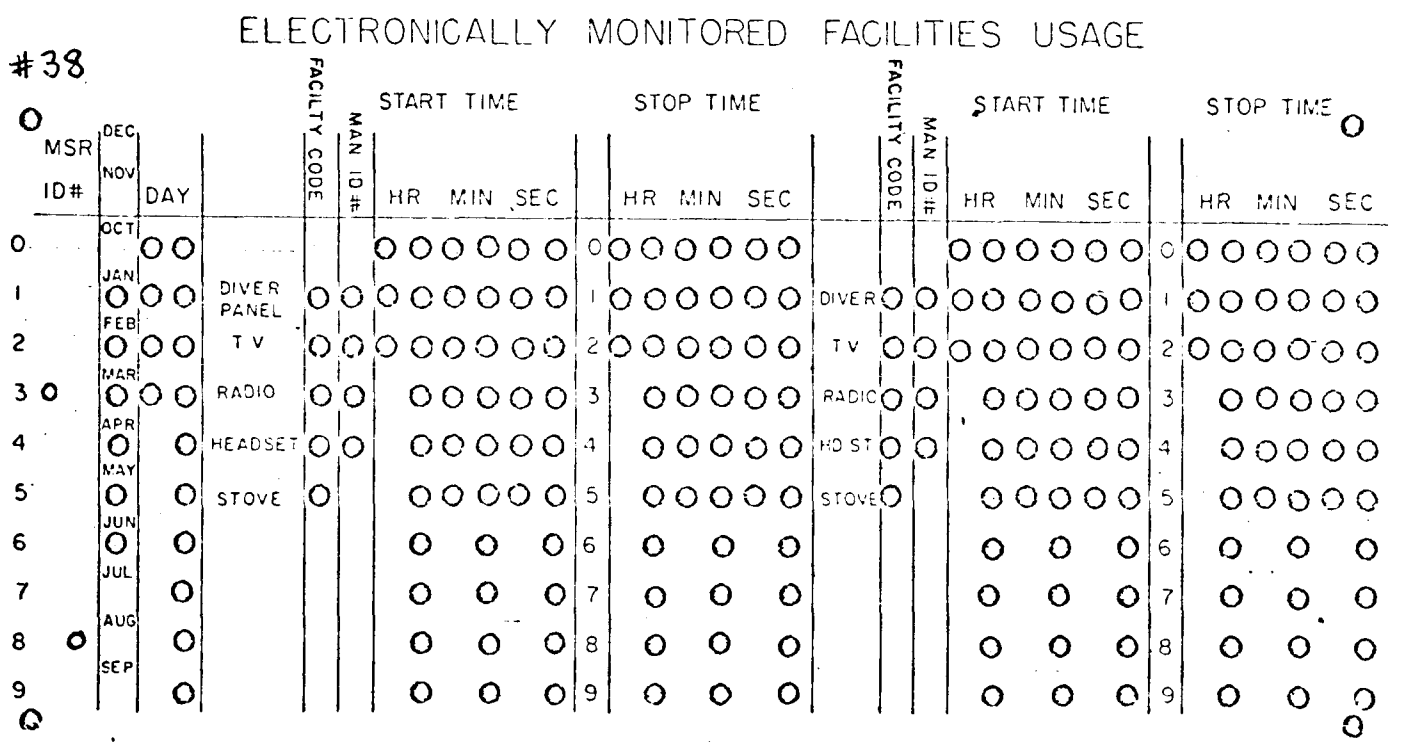


ELECTRONICALLY MONITORED FACILITIES USAGE

This measure focuses on the individual use of each of the following facilities: diver panel, the TV, the radio, the headsets, and the stove. Normally this data should be available from the Franklin Counter printout. In case there is a breakdown in this facility, collection will revert to on-line paper and pencil checklist collection with off-line transfer to IBM cards via the appropriate template.

The organization of the template is almost self explanatory. There are two sections on the template for the recording of up to two separate events. The facility code identified by the headings immediately to the left of the punch holes indicates what is being used. The man's ID number (which incidently will not always be available from the counter printer and thus, cannot be recorded) identifies who is using the facility. The start and stop times of the usage are available on the printout. The printout format is twelve columns across and the kinds of information each column can contain is available on the checklist on the opposite page.

Also, please examine the copy of paper and pencil checklist which will serve as a backup measure or infrequently as a check on the overall electronic monitoring system for accuracy and validity.



Franklin Counter Printout Legend

COLUMN 1 — Indicate ID No. of man going into water (i.e. Diving panel egress)

COLUMN 2 — Indicates ID No. of man coming out of water (i.e. Diving panel ingress)

COLUMN 3 — Indicates On position of _____ with numbers_____

Headphones	1-4 (ID # of aquanaut)
Television	5
Radio	6
Stove	7
Operator Button	8

COLUMN 4 — Indicates Off position of _____ with numbers_____

Headphones	1-4 (ID # of aquanaut)
Television	5
Radio	6
Stove	7
Operator Button	8

COLUMN 5 & 6 — Indicates mission day facility operated

COLUMNS 7-12 — Indicates hours, minutes, seconds of activation or deactivation of particular facility

Facilities Code

2. TV
3. Radio
4. Headphone
5. Stove
6. Operator Button

Facility Used	By Whom ID #	Time Started (Nearest Minute)	Time stopped (Nearest Minute)

ELECTRONICALLY MONITORED FACILITIES USAGE Date_____

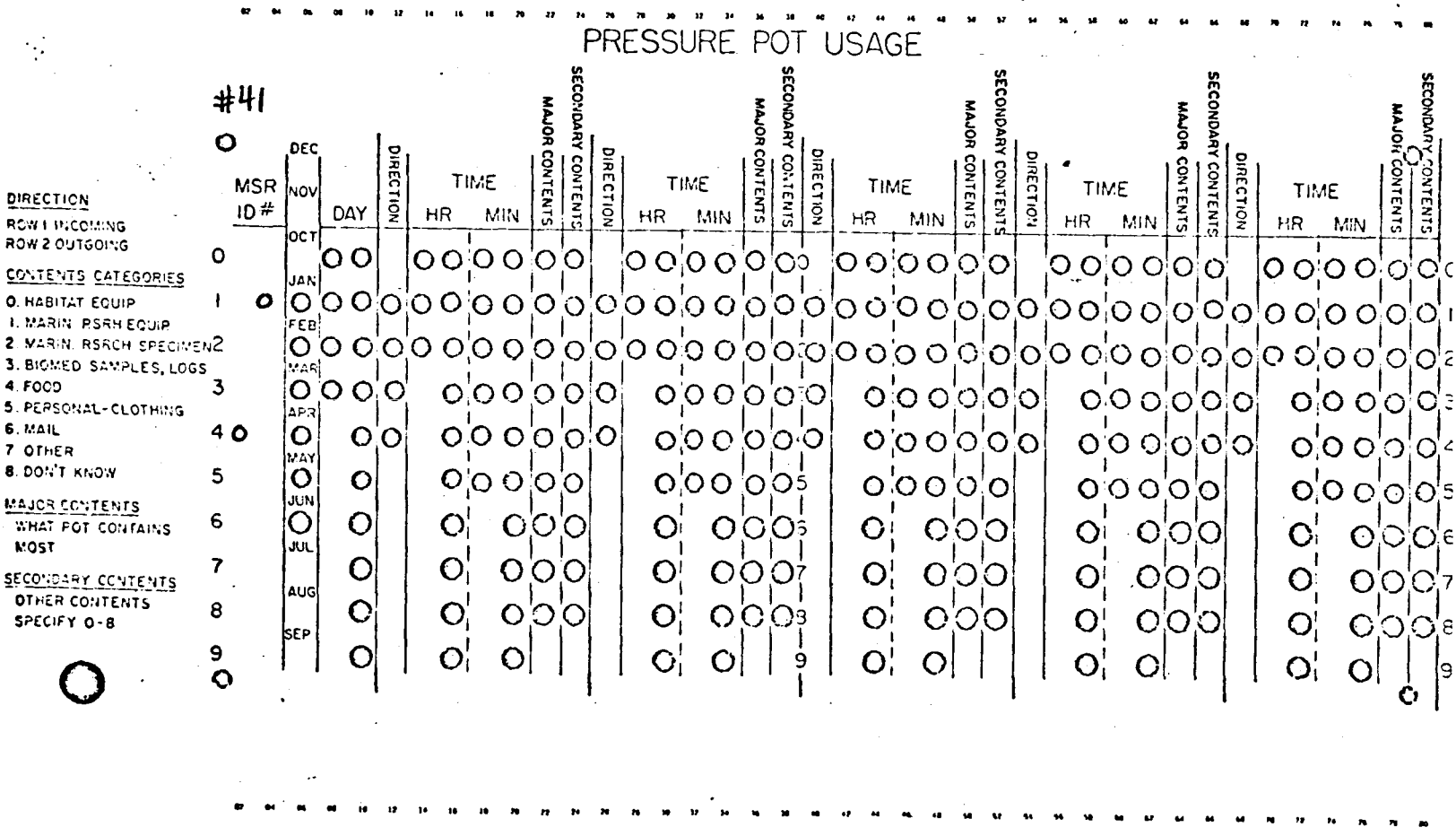
PRESSURE POT USAGE

This measure will be collected on-line with a supplied checklist. See Checklist next page. The observer should sensitize himself to all pressure pots coming into and leaving the habitat.

The recording procedure includes identifying the size and direction of each pressure pot. Since the "direction" category is incompletely defined on both the template and checklist, the entire category will be listed here. Under the direction category -

Row 1 - should read incoming small pot
Row 2 - should read outgoing small pot
Row 3 - should read incoming large pot
Row 4 - should read outgoing large pot

The date should, of course, be noted on the checklist. The time the pressure pot arrives or leaves the habitat should be recorded to the nearest minute. The major contents making up the better part of the load should be identified if possible. Use the content categories. If not, use number 8 - the don't know category choice. If the lesser contents can be identified, record this using the same categories. Again use number 8 category choice if you cannot tell the secondary contents. Off-line transfer to punch cards is required.



POT CONTENT CATEGORIES

Code	Category
0.	HABITAT EQUIPMENT-Items for repair and maintenance of habitat or those which somehow contribute to the same.
1.	MARINE RESEARCH EQUIPMENT-Hardware such as tanks, knives, nets etc. and software such as journals and reports i.e., anything making a direct contribution to the marine research program.
2.	MARINE RESEARCH SPECIMENS-Anything brought in from the sea by the aquanaut scientists.
3.	BIOMEDICAL SAMPLES AND LOGS-Materials from BUMED prog. such as blood, fecal, aerobiological samples: logs & questionnaires from psychological mission, gauge readings from operations/engineering mission.
4.	FOOD
5.	PERSONAL CLOTHING-Personal effects and clothing of aquanauts.
6.	MAIL
7.	OTHERS
8.	DON'T KNOW

ORDER	[Check one] INCOMING	OUTGOING	TIME HOURS	MINUTES	MAJOR CONTENTS (CODE)	SECONDARY CONTENTS (CODE)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

PRESSURE POT USAGE Date_____

BIOMEDICAL MONITORING

This measure is to be collected on-line on a supplied checklist and transferred off-line to punch cards. It focuses on a number of required tasks the aquanauts must do for the medical officers and physiologists vitally interested in the divers' health and certain bodily functions. These include bacteriological sampling, hematological samples, ventilatory functions and the taking of vital signs like pulse rate, blood pressure, oral temperature, etc.

Other possible measures that may occur during the mission, but more likely will take place either pre and/or post mission, are respiratory control, auditory and vestibular functions, visual functions and neurological functions. The observer should have little trouble in identifying either when the individual measures are likely to occur or when they actually happen, as they have been scheduled somewhat in advance. In fact, of particular interest to the behavioral mission is the adherence to the actual monitoring schedule set up some weeks in advance, (the scenario scheduled time) and the possible rescheduling of the monitoring by the aquanauts in habitat (aquanaut prior meeting scheduled). Both of these times will be filled out in advance by the investigator. The actual time a measure occurs should be recorded along with what is monitored (see categories), who is monitored (man's ID#), who offers major (major assist ID#) and minor (minor assist ID#) assistance, plus the end time of the monitoring.

Although some of these sub measures are decidedly unstructured, the identification of each will increase as the observer sees first-hand what actually constitutes each measure. Also, the appendix contains a page devoted to more fully examining what constitutes biomed monitoring.

#45

BIOMEDICAL MONITORING

MSR ID#	DEC / NOV / OCT / JAN / FEB / MAR / APR / MAY / JUN / JULY / AUG / SEPT	DAY	BIOMEDICAL SAMPLING CATEGORIES	MEASURE	MAN ID#		SCENARIO SCHEDULED TIME HR	SCENARIO SCHEDULED TIME MIN	AQUANAUT PRIOR MEETING SCHEDULED HR	AQUANAUT PRIOR MEETING SCHEDULED MIN	TIME ACTUALLY BEGUN HR	TIME ACTUALLY BEGUN MIN	ASSISTANCE MAJOR ASSIST. ID#	ASSISTANCE MINOR ASSIST. ID# ID#	TIME ACTUALLY FINISHED HR	TIME ACTUALLY FINISHED MIN	
0			BACTERIOLOGICAL SAMPLING			0											0
1			HEMATOLOGY STUDIES			1											1
2			VENTILATORY FUNCTIONS			2											2
3			VITAL SIGNS			3											3
4			RESPIRATORY CONTROL			4											4
5			Ear exam			5											5
6			VISUAL FUNCT			6											6
7			Psycho-motor test			7											7
8						8											8
9						9											9

BACTERIOLOGICAL COUNT INCLUDES

1. Four swabs: skin, ear, nasopharynx, rectum
2. Habitat wall swab
3. aerobiological sample

HEMATOLOGICAL STUDIES INCLUDES

1. A drawn blood sample

VENTILATORY FUNCTION INCLUDES

EVERY SEVENTH DAY/AQUANAUT FOR 1 HR.

1. Breathing into a spirometer

VITAL SIGNS INCLUDES

EACH DAY/AQUANAUT

1. Oral temperature
2. Body weight
3. Respiration rate
4. Blood pressure
5. Pulse
6. Skin examination
7. EKG once per week

ORDER	Measure Code	Man ID#	SCHED.	Scenerio Scheduled Monitoring for	Organizational Meeting Schedule	Time Actually Started HRS. MIN.	Time Stopped HRS. MIN.	Assistance Major ID#	Assistance Minor ID#	Assistance Minor ID#
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

CODED MEASURE CATEGORIES

0. Bacteriological count
1. Hematological studies
2. Ventilatory function
3. Vital Signs
4. Respiratory Control
5. Ear, ENT Function
6. Visual Function
7. Psychomotor test

BIOMEDICAL MONITORING

Date _____

ADHERENCE TO WATCH

This measure is collected on-line with use of a supplied checklist and transferred off-line to punch cards. Focus of the measure is on the watch periods stood by each of the aquanauts. Since watchs will be scheduled sometime in advance, these times will be entered in advance by the investigator on the checklist. These times will serve as a guide for the observer. However, there may be some deviating from the watch scheduled as the title of the measure implies, so the observer is directed to look out for the actual beginning and ending of each aquanaut's watch, entering this on the checklist.

#40

ADHERENCE TO WATCH

MSR ID#	DEC / NOV / OCT / JAN / FEB / MAR / APR / MAY / JUN / JUL / AUG / SEP	DAY	MAN ID#	SCHEDULED START HR	SCHEDULED START MIN	SCHEDULED STOP HR	SCHEDULED STOP MIN	ACTUAL START HR	ACTUAL START MIN	ACTUAL STOP HR	ACTUAL STOP MIN		MAN# ID	SCHEDULED START HR	SCHEDULED START MIN	SCHEDULED STOP HR	SCHEDULED STOP MIN	ACTUAL START HR	ACTUAL START MIN	ACTUAL STOP HR	ACTUAL STOP MIN
0												0									
1												1									
2												2									
3												3									
4												4									
5												5									
6												6									
7												7									
8												8									
9												9									

Time Order	Scheduled Man ID#	Actual Man ID#	Scheduled Start Time	Scheduled Stop Time	Actual Start Time	Actual Stop Time
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

ADHERENCE TO WATCH

Date_____

MAINTENANCE OF SELF AND HABITAT

This measure is recorded on-line by use of a specific checklist. It contains eight events identified as (0) entering the head, (1) showering, (2) shaving, (3) laundry, (4) handling substantial food stores, that is transporting ample supplies from place to place, (5) five-minute periods of housekeeping, (6) 10-minute periods of maintaining and/or repairing the habitat and (7) changing of the baralyme which reduces CO_2 content of habitat atmosphere. *

The observer is required to simply record a count (hash mark) of the number of times any aquanaut completes any of these events, so that the investigators will have a count of these occurrences for each 24-hour period. The checklist (see opposite page) supplies cubicles identified by the event and the aquanaut for recording each occurrence of each event.

Off-line the information is transferred via template to punch cards.

*The observer is also to record the times required (in minutes and seconds) to remove all eight nuts from the baralyme panel, and then to replace these nuts after the fresh baralyme cannister has been inserted. These times are to be entered on the checklist, but transferred to Template #27.

MAINTENANCE OF SELF AND HABITAT

#39

EVENT CODE
0. ENTERING HEAD
1. SHOWERING
2. SHAVING
3 LAUNDRY
4. HANDLING FOOD STORES
5. FIVE (5) MIN. PERIOD OF HOUSEKEEPING
6. 10 MIN. PERIOD OF HABITAT MAINTENANCE AND REPAIR
7. BARALIME TRANSFER

MSR ID #	DEC NOV OCT JAN FEB MAR APR MAY JUN JUL AUG SEP DAY	MAN ID #	EVENT CODE	EVENT FREQ.	MAN ID #	EVENT CODE	EVENT FREQ.	MAN ID #	EVENT CODE	EVENT FREQ.	MAN ID #	EVENT CODE	EVENT FREQ.	MAN ID #	EVENT CODE	EVENT FREQ.	MAN ID #	EVENT CODE	EVENT FREQ.	MAN ID #	EVENT CODE	EVENT FREQ.	IF BARALYME THEN TIME HRS	MIN
0		0			0			0			0			0			0			0			0	
1		1			1			1			1			1			1			1			1	
2		2			2			2			2			2			2			2			2	
3		3			3			3			3			3			3			3			3	
4		4			4			4			4			4			4			4			4	
5		5			5			5			5			5			5			5			5	
6		6			6			6			6			6			6			6			6	
7		7			7			7			7			7			7			7			7	
8		8			8			8			8			8			8			8			8	
9		9			9			9			9			9			9			9			9	

INSTRUCTION: Make hash mark for each occurrence during particular 24 hour day.

NUMBER OF OCCURRENCES/DAY

EVENT	MAN #1	MAN #2	MAN #3	MAN #4
0. Entering Head				
1. Showering				
2. Shaving				
3. Laundry				
4. Handling food stores				
5. 5 minute periods of housekeeping				
6. 10 minute periods of habitat maint. and repair				
7. Baraline transfer	Start Times	Start Times	Start Times	Start Times

MAINTENANCE OF SELF AND HABITAT Date_____

POTENTIAL WINCH USAGE

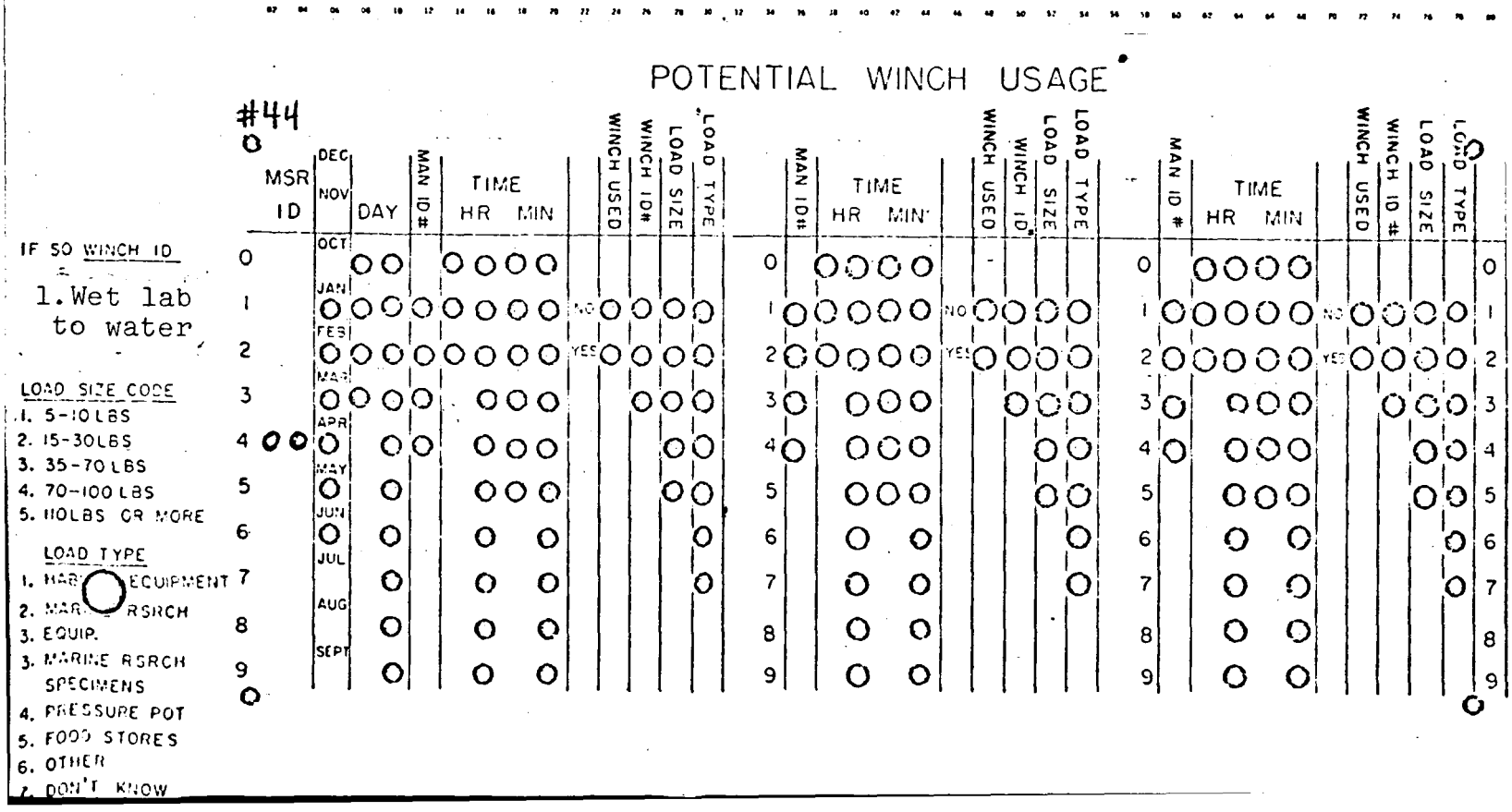
This data will be collected via checklist on-line and transferred to punch cards later. The measure itself focuses on the transportation of material from deck to deck or from the water to the wet lab or its' reverse.

In order to record the desired data the observer will be continually challanged to note all load transportations as described above and occasionally to judge one's significance. To elaborate, at times the winch will be used, other times not. The observer is required to record every actual usage of any winch whatever the size of the load. The observer also records every load transportation which the observer judges to require the use of a winch even though one is not used.

Record

1. The date
2. Who is transporting the load (Man ID#)
3. To the nearest minute the time this event occurs.
4. Was the winch in fact used for this load? (Winch used)
5. If so, which winch was it? (Winch ID#) See template code.
6. If the load was judged to be of sufficient size what was its weight? (load size) See template size code.
7. And what was the (load type) (See the template code load type)

The template allows three separate records to be punched.



Man ID	Time	Winch used or not Yes [Check one]	No	If used, which Winch	Estimated lbs. of load	Type of load

Winch ID Code

Wet lab to water = 1
Bridge to crew quarters = 2
Environment control system to wet lab = 3

Kind of Load Code

1. Habitat Equipment
2. Marine Research Equipme
3. Marine Research Specime
4. Pressure Pot
5. Food stores
6. Other
7. Don't know

POTENTIAL WINCH USAGE

Date_____

NUMBER OF PIECES OF MAIL

This measure will be collected off-line using the template illustrated below. It focuses on the number of pieces of mail each aquanaut gets each day and the number of letters he sends out each day. At the time of writing these instructions, this information source was not yet fully defined. It was felt, however, that a centralized location for incoming and outgoing mail at the base camp would be available and such data recorded for us by an accommodating official. The observer task would simply be to transfer the data to the punch card using the appropriate template making sure to fill in the date and measure identification number.

MAIL
IN : NO OF PIECES INCOMING
OUT : NO OF PIECES OUTGOING

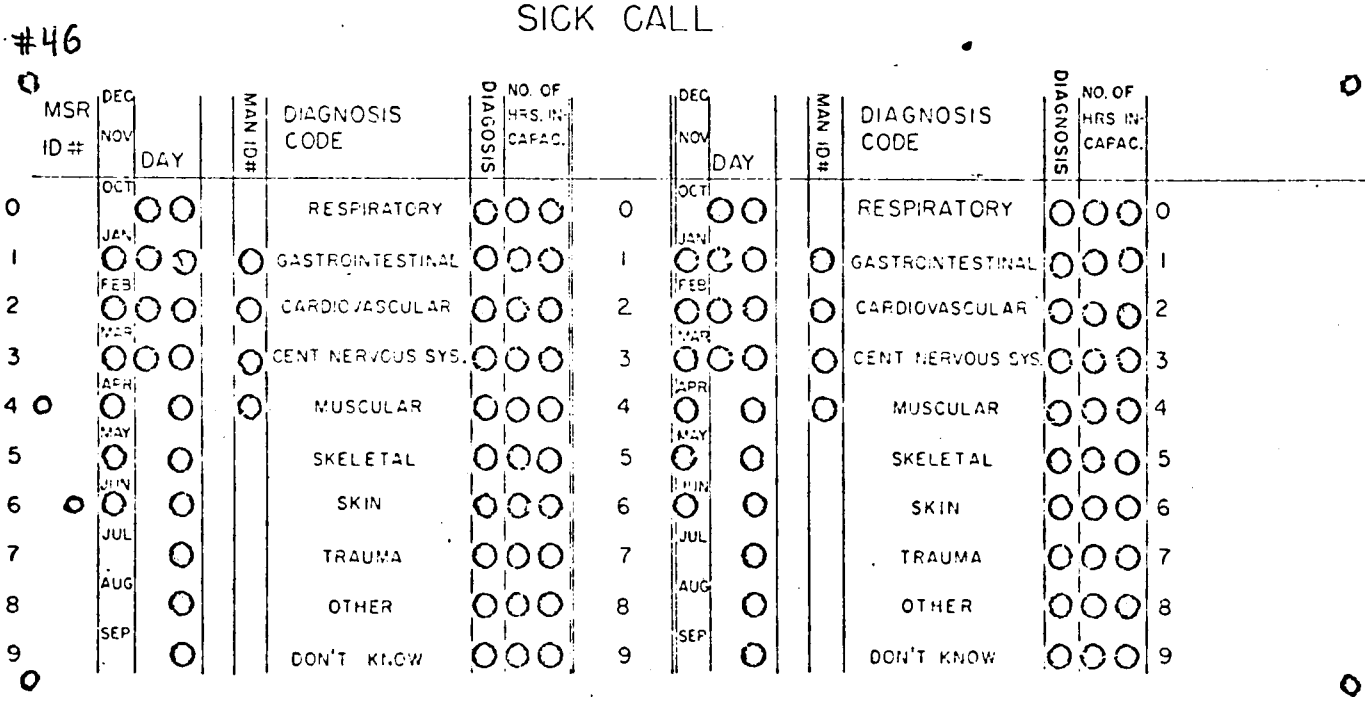
NO. OF PIECES OF MAIL

#42

MSR ID#	DEC/NOV/OCT/JAN/FEB/MAR/APR/MAY/JUN/JULY/AUG/SEP	DAY	MAN#1 IN	MAN#1 OUT	MAN#2 IN	MAN#2 OUT	MAN#3 IN	MAN#3 OUT	MAN#4 IN	MAN#4 OUT	DEC/NOV/OCT/JAN/FEB/MAR/APR/MAY/JUN/JULY/AUG/SEPT	DAY	MAN#1 IN	MAN#1 OUT	MAN#2 IN	MAN#2 OUT	MAN#3 IN	MAN#3 OUT	MAN#4 IN	MAN#4 OUT
0																				
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				

SICK CALL

This measure can be collected on-line with the template or by off-line reference to the medical officer's records with the information punched directly onto IBM punch cards. It focuses on the individual aquanaut's illnesses during the mission and the amount of incapacitations he suffers, if any, in terms of hours. A decision on the actual source of this data will have to be delayed until the mission actually starts.

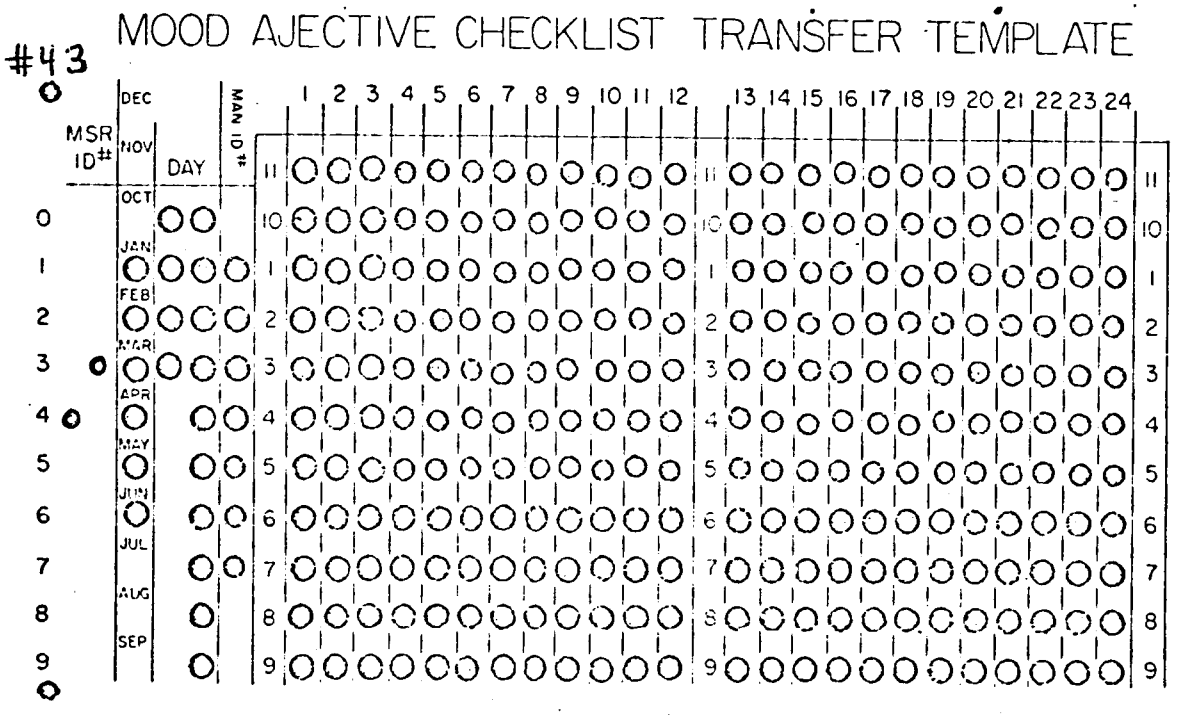


MOOD ADJECTIVE CHECKLIST TRANSFER TEMPLATE

The template is to be used purely as a means of transferring paper and pencil checklist information generated by the aquanauts to IBM cards. Such a record will be done off-line and as a result is not critical in the sense of when it is actually transferred onto IBM cards.

There are 24 adjectives which the aquanauts respond to by marking the quality and strength of their response on a scale of 1 to 11. Transfer these responses in appropriate order to the IBM cards.

See copy of MACL in appendix, page 43.



APPENDIX

MEASURE PRIORITIES LISTING

LOCATION RECORD

CONVERSATIONAL RECORD

TRANSIT RECORD

MEAL BEHAVIOR DIVE RECORD

COMMUNICATION WITH TOPSIDE

TIME OF ARISING TIME OF RETIRING

EEG ELECTRODE HOOKUP

ELECTRONICALLY MONITORED FACILITIES USAGE

PRESSURE POT USAGE

BIOMEDICAL MONITORING

ADHERENCE TO WATCH

MAINTENANCE OF SELF/HABITAT

POTENTIAL WINCH USAGE

PIECES OF MAIL

SICK CALL

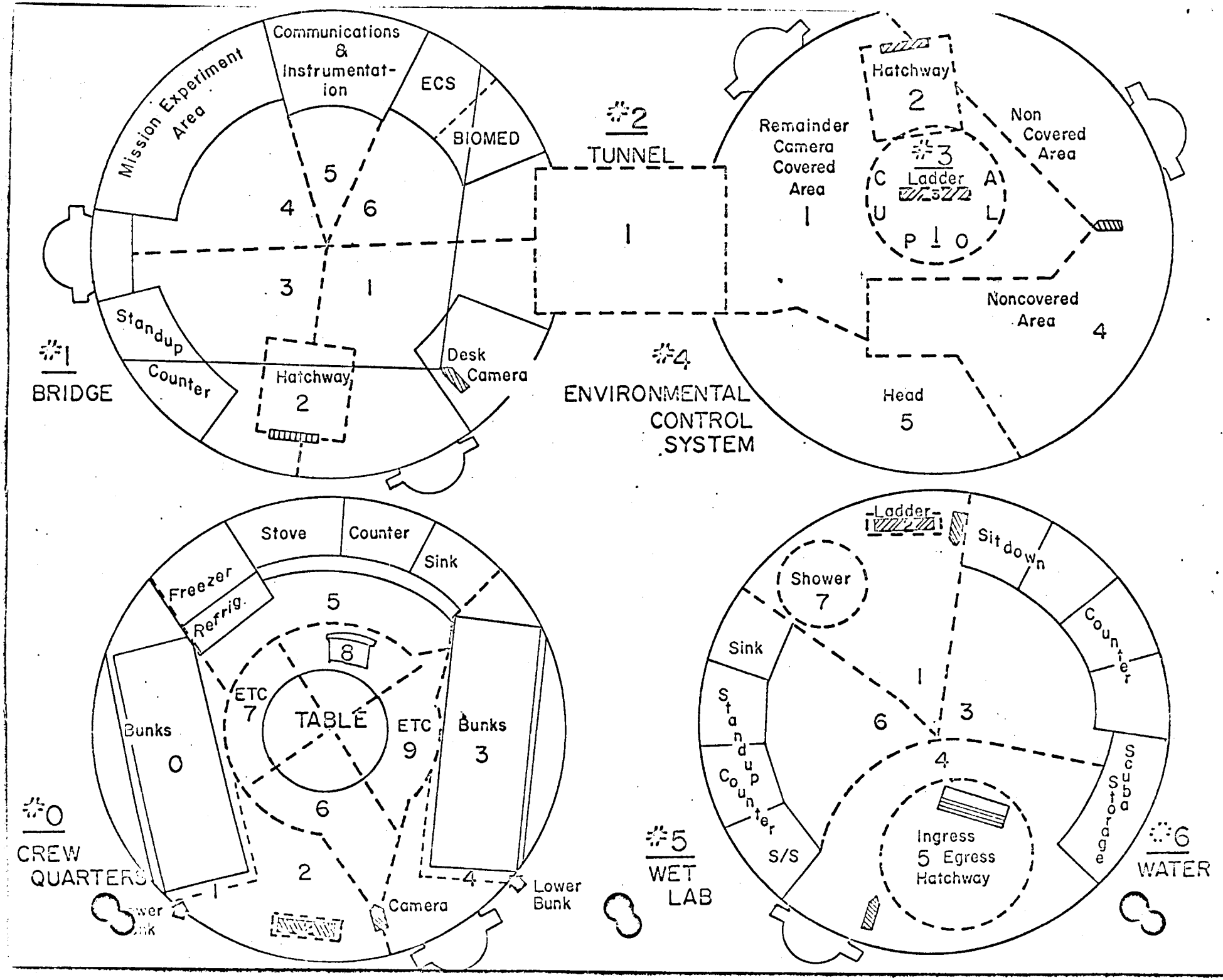
MOOD ADJECTIVE CHECKLIST

GLOSSARY

B	Bridge-one of the four major habitat compartments. The command center of the habitat.
CQ	Crew Quarters-another habitat compartment. Primarily a living area complete with sleeping, eating, and recreative facilities.
Data	Specified information
Data Collection	Gathering together certain specified information. Can be recorded using information recorder or check-list from TV monitor, records kept by others, Franklin Counter, etc.
Diver Panel	4 pairs of button switches in the habitat near ingress-egress hatchway. Each aquanaut manually activates one switch when entering the water and its' cousin when entering the habitat.
Diving Officer	Aquanaut responsible for monitoring from within the habitat the safety and activity of the divers in the water. He is in command during an emergency.
ECS	Environmental control system. This compartment in the habitat, also known as the engine room, contains the greater majority of the life support systems.
Format	Usually referring to the particular organization of data to be collected on the information recorder template.
Franklin Counter	This piece of equipment mounted on a rack is activated by electronic pulses generated by certain switches being turned on or off in the habitat or topside.
Headsets	Earphone sets, one in each aquanaut's bunk for private listening to entertainment facilities (TV, radio). When the headset is in use, a microswitch will activate the counter.
IBM card	The punch card; manila colored card covered with a pattern of numbers, one per preperforated section.

Glossary (continued)

Monitor	As a noun: either the television receiver or the behavioral observer. As a verb: observing, taking note of behavior.
Off-line	After the fact. Usually used in describing the recording of some kind of behavior at some other time than when it is actually occurring.
On-line	Used to describe the recording of behavior while it is happening in distinction to off-line recording.
Overlay	Synonymous with template (see template).
Punch card	Synonymous with IBM card.
Recording Period	A time frame during which recording or collecting data is actually going on.
Sampling Period	A period of time within which an observer is sensitized to measure a particular kind of behavior, if and when it occurs within those time limits.
Standby diver	The aquanaut responsible for going into the water to assist a diver in trouble.
Templates	The information cards containing the behavioral measures punched onto IBM cards.
WAT	Abbreviation for water
WL	Wet lab - a major habitat compartment offering access to the sea, and serving as the primary scientific and research area of the habitat.


Communications & Instrumentation
ECS
Mission Experiment Area
BIOMED
5
4
6
3
1
Standup Counter
Hatchway 2
Desk Camera
#1 BRIDGE
#2 TUNNEL
1
#4 ENVIRONMENTAL CONTROL SYSTEM
Remainder Camera Covered Area 1
Hatchway 2
Non Covered Area
#3 Ladder
C A U L P I O
Noncovered Area 4
Head 5
Stove
Counter
Sink
Freezer
Refrig.
5
8
ETC 7
TABLE
ETC 9
Bunks 0
Bunks 3
6
2
1
4
Camera
Lower Bunk
#0 CREW QUARTERS
#5 WET LAB
Ladder
Sit down
Shower 7
Counter
Sink
1
Standup Counter
6
3
4
S/S
Ingress 5 Egress Hatchway
Scuba Storage
#6 WATER

INSTRUCTIONS FOR USE AND CARE OF THE IBM INFORMATION RECORDER

1. When the observer finishes recording a measure, he should unload the punch card immediately and reload with a fresh, unused card.

2. One single card information recorder will be used only for the location record. One double card recorder will be employed in collecting transit records only. In both cases the template or overlay, as it sometimes called, will remain in the recorder permanently. Each of the other templates should be removed from the recorder immediately after the particular measure's information has been punched.

3. When reloading, and before punching, insure that the slide table holding the punch card is firmly in place.

4. Be sure to punch identifying information right away, such as measure ID #, date, etc.

5. While punching information, be methodical. Check yourself for errors. As you become more practiced, try to increase your speed to prevent staleness. This will also allow you to record the maximum amount of accurate data.

6. When removing the punched IBM card from the recorder, inspect the backside of the card for punched sections which did not completely separate from the card. If time is of essence, you may delay this check until a slow period then flip through a stack of cards. Often just riffling through a stack of cards will shake loose any dangling chads.

7. Each observer should use two of the four sections of the card file nearest him. The outside section should hold punched cards, the inner section, the fresh cards.

8. Because the templates are so few and crucial to the data collection program, extra care in handling them will always be exercised. Of special concern is sliding the template into and out of the recorder. Also some thought should be given to punching only in the holes in the template maintaining the good condition of the overlay surface.

9. Occasionally the slide should be removed and the rubber tracks cleared of chads with the stylus. Less frequently the chad reservoir will need emptying.

10. If you made an error:
    1. At or near the beginning of the card: remove the card and punch a fresh one.

2. Toward the middle or beyond: open the slide, circle in red the correct punch on the errored columns, return slide and punch rest of data. Later off-line this card can be reproduced and until then should be held out from the punched card file.

WHAT CONSTITUTES BIOMEDICAL MONITORING

The medical doctors responsible for the well being of the aquanauts, and project scientists vitally interested in particular human physiological systems have developed a biomedical program which monitors certain tests of health and physiological performance. Since no one but the aquanauts themselves will be in the habitat over the 60-day diving period, they will necessarily handle the bulk of such testing themselves. Although a few measures may be self administered, the majority will require another aquanaut's assistance. Thus, who assists whom has significance for the psychological observer recording these measures.

This section is directed at describing each of the four primary measures to be accomplished during the dive period. To this end bacteriological count, hematological studies, ventilatory function and vital signs are outlined below.

Bacteriology

Samples	Skin swab, ear swab, nasopharynx swab and rectum swab, plus one fecal sample and one aerobiological sample. Habitat wall swab.
Collection	Self
Duration	Approximately 15 minutes/man/
Time of day	Uncritical
Equipment	Specimen tubes, swabs, rack, petrie plates, standard air sampler, fecal specimen containers.

Hematology

Sample	Blood
Collection	By another
Duration	15 minutes/man/every 7th day
Time of day	Wednesday - early morning
Equipment	Syringes, needles, tubes, tourniquet, sponges, urine sample container.

Ventilation

Samples	Spirometer paper record
Collection	Self, some assistance
Duration	One hour/man/week
Time of day	Wednesday mornings
Equipment	Spirometer with O_2 line, CO_2 absorber, and recording drum. Esophageal balloons.

Vital Signs

Samples	Oral temperature (daily), body weight (daily), respiration rate (unknown), blood pressure (daily), pulse (daily), skin examinations (daily), ear-eye-nose-throat examinations (unknown), EKG monitoring (once/week).
Collection	Assistance in obtaining blood pressure, EKG, EENT and skin data.
Duration	Approximately 2 1/2 hours/aquanaut/week
Time	After dinner, except EKG, Wed. morning.
Equipment	Sphygmomanometer, stethescope, scale, oral probe, amplifier, gulton temperature display and EKG amplifier, electrode set, electrode paste, ophthalmoscope, tongue depressors, symptom check list, underwater camera, film.

CONFIDENTIALITY

Each observer will be witness to many confidential events occurring in the habitat. Some of these will be of a highly personal nature to the aquanauts, others are internal to the project only. Maintaining the highest ethical standards are of utmost necessity for you as a psychological observer on Project TEKTITE I. To this end two restrictions will be placed on you.

1. Under no circumstances are you to talk with anyone other than Lt. Mach, Dr. Radloff or Dr. Zill about anything happening in the habitat or behavioral van unless directed to by one of these three investigators. This includes such people as newspaper and television reporters, visitors, congressmen and other dignitaries. Your stock answer to any such inquiries is:

   "I have no comment. Please direct your inquiries to a behavioral scientist."

ABSOLUTELY NO VIOLATION OF THIS RULE WILL BE TOLERATED

2. You will undoubtedly see and hear things in the habitat as observer that would or could be termed confidential. Such things should not be discussed with even members of other observer teams. If there is doubt about confidentiality, consult an investigator. Events of importance to the behavioral program in your opinion should be discussed with an investigator. Some of these events may be listed in the unusual events log.

Name:_____ Date:_____ Time:_____

Below is a list of feelings people have. Show how you feel right now by circling the number closest to your feelings. Answer each question.

EXAMPLE: If you felt more than somewhat, but less than extremely concerned you would answer like this:

Concerned	1	2	3	4	5	6	7	8	(9)	10	11
	Not at all					Somewhat					Extremely
1. FINE	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
2. JITTERY	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
3. ENERGETIC	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
4. PLEASED	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
5. AFRAID	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
6. SAD	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
7. VIGOROUS	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
8. GOOD	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
9. ALERT	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
10. TERRIFIED	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
11. CALM	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
12. ALARMED	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
13. RESTLESS	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
14. DESPERATE	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
15. LIVELY	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
16. CHEERFUL	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
17. INSECURE	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
18. FRIGHTENED	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
19. ACTIVE	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
20. MISERABLE	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
21. STEADY	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
22. HAPPY	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
23. TIMID	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely
24. OVERJOYED	1	2	3	4	5	6	7	8	9	10	11
	Not at all					Somewhat					Extremely

Research Assistant Team
Shift Schedule

	T	I	M	E		
	6 - 10	10 - 14	14 - 18	18 - 22	22 - 2	2 - 6
1st week	A	B	A	B	5	6
2nd week	B	C	B	C	1	2
3rd week	C	A	C	A	3	4
4th week	A	B	A	B	5	6

Team A
Men 1&2

Team B
Men 3&4

Team C
Men 5&6